

lieve that its fibres are concerned in the conduction of pain sensations. "One thing seems certain, viz., that these fibres do not pass to the cerebellum *via* the restiform body. What, then, becomes of them? There are two possible ways in which they may terminate. They may have passed into the central part of the medulla, and thus become lost in the mass of fibres forming the bulk of the *formatio reticularis*, or they may have become connected, fibre by fibre, with the numerous ganglion-cells lying about in that part of the medulla, more especially with that group of them known as the *nucleus lateralis*. The *nucleus lateralis* is the remnant or upper termination of the lateral horn of the gray matter of the cord. If we accept as possible the conclusion that this tract is ultimately connected with the cells of the *nucleus lateralis* in the medulla, there is no reason why its fibres should not be received from time to time in its upward course into the cells of the lateral horn of the cord lower down. Thus we have some sort of anatomical evidence that the gray matter of the cord is concerned in the conduction of pain sensations."

PHYSIOLOGY OF THE NERVOUS SYSTEM.

EXPERIMENTS ON SPECIAL SENSE LOCALIZATIONS IN THE CORTEX CEREBRI OF THE MONKEY. By F. A. SCHÄFER, F.R.S. (*Brain*, x., 362, January, 1888).

It is well known that experiments upon animals regarding the visual area of the brain have led to different results in different hands. Ferrier was the first to localize this area, and he found it in the angular gyrus. Munk, Luciani and Tamburini, and Schäfer and Horsley all agreed in localizing the visual area in the occipital lobe, contending that the angular gyrus had nothing to do with vision. All cases of cortical blindness in man support the last view, and indicate that in monkeys bilateral hemiopia rather than unilateral blindness should be the effect of occipital lobe lesion. In the last edition of his work on "Functions of the Brain" Ferrier admits that the occipital lobe has something to do with vision, and admits that its lesion causes hemiopia, but he still claims for the angular gyrus an important part. It was in order, if possible, to finally settle this controversy that the present series of experiments was undertaken by Professor Schäfer and Dr. Sanger Brown. They seem to prove conclusively that the visual area lies wholly in the occipital lobe, each

hemisphere being related to both eyes, so that a unilateral destruction produces bilateral hemiopia. They further show that the cortex of the angular gyrus has nothing to do with vision, but that beneath it passes the visual tract leading to the occipital lobe, injury of which tract was probably responsible for the effects observed by Ferrier (a probable explanation which was first offered by the reviewer, in 1884, in the *American Journal of the Medical Sciences*, and which has met with approval and adoption elsewhere since). These experiments ought to put an end to the controversy, since they bring clinical facts and experimental results into complete harmony.

The results regarding the auditory area are entirely negative. Ferrier located this area in the superior temporal gyrus, but Schäfer and Brown have destroyed this gyrus in six monkeys without in any way affecting hearing. They gently condemn any conclusions as to sensory areas from irritation of the brain, and depend on the results of destruction in their conclusions. It may be stated that very little, if any, reliable clinical evidence can be cited to show that the auditory area in man lies in the first temporal convolution; a case of L. C. Gray's, recently reported, having demonstrated that complete softening of both temporal lobes does not necessarily produce deafness. On the other hand, word-deafness is undoubtedly caused by such lesion in the large majority of cases; and recent anatomical investigations seem to indicate that the intra-axial course of the auditory tract ends in the temporal lobe.

The animals in which the entire temporal lobe was removed showed no evidence of loss of taste or smell.

In regard to these results, it must be stated that they do not harmonize with those of all the other observers, who unite in assigning these functions to the temporal lobe. In regard to tactile sensibility, Schäfer found that removal of the gyrus forniciatus caused hemianæsthesia of the opposite side, except of the forearm and hand in one monkey. This persisted for seven months after the operation. Any conclusion from a single experiment is not, however, warranted.

M. A. S.

THERAPEUTICS OF THE NERVOUS SYSTEM.

ON THE TREATMENT OF HYDROPHOBIA BY HYPOSULPHITES. Dr. A. H. Newth (*Maryland Medical Journal*, March, 1888),

Nearly thirty years ago Professor Polli, of Milan, suggested the use of sulphurous acid in cases of icorrhæmia. He proved by ex-